

CLAIMS

1. Method of design for a micro-filter device (1), for optimising the same for use in a situation in which at different flows of oil through the device (1), different pressure differences P_d over the device (1) are allowed, comprising the steps of determining the minimum magnitude, in particular the minimum cross section of a restriction (26) for allowing a minimum amount of flow of oil for by-passing a micro-filter element (7) of the device (1), required for attaining a given maximum pressure difference (P_2) over the device at a lowest given amount of flow of oil through the device (1), and of limiting the maximum pressure difference P_d to a maximum pressure difference (P_1) given at a largest given amount of flow through the device (1) by the use of a pressure valve system (22) opening at said maximum pressure difference and creating a second flow of oil by-passing the filter element (7) once said maximum pressure difference (P_1) has been reached.
- 15 2. Method in accordance with claim 1, in which the cross-section of the restriction (26) is chosen to be within a range from minus 10% from and to a cross-section required for attaining said maximum allowed pressure difference (P_2) at said lowest given flow of oil through the device, preferably equal to said pressure difference (P_2).
- 20 3. Method in accordance with claim 1 or 2, in which the opening pressure of the valve system (22) is designed to be a pressure difference value P_d which, at said maximum given amount of oil flow, is within a range of minus 10% from and to said given maximum pressure difference value (P_1), preferably equal to said pressure difference (P_1).
- 25 4. Method in accordance with any of the preceding claims, where the cross section of the orifice (26) and/or the opening pressure of the pressure valve system (22) as applied to a design following from the method is set at any of the indicated values, in particular at the minimum allowable cross section thus defined, and/or the pressure valve system opening value at said maximum allowable pressure difference.
- 30 5. Filtering device (1) comprising a micro-filter (7), the axial end faces of which are at least largely closed for passage of oil by axial end face closure means (5, 15), characterised in that the device is provided with both an orifice (26) and a pressure valve system (22) allowing a flow of oil by-passing the filter element (7).

6. Device (1) according to the preceding device claim, characterised in that at least one of both provisions (26, 22) is incorporated in an end closure means (15).
7. Device (1) according to any of both preceding device claims, characterised in that the orifice provides for a minimum flow of oil by-passing the filter element at all 5 conditions.
8. Device (1) according to any of the preceding device claims, characterised in that the valve system (22) provides for an additional by-passing flow of oil on condition that a maximum allowable pressure difference over the filter device (1) is reached.
9. Device (1) according to any of the preceding device claims, characterised in 10 that the orifice (26) is integrated in a valve system part (25).
10. Device (1) according to any of the preceding device claims, characterised in that the valve system comprises a pressure spring (24), and is preferably incorporated in the interior space (14) of the filter element, preferably near an axial end thereof.